

“Calibration, Validation, and Sensitivity Analysis: What’s What and Who Cares?”

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One very simple definition of calibration is to adjust a set of parameters associated with a computational model so that the model agreement is maximized with respect to a set of experimental data. One very simple definition of validation is to quantify our belief in the predictive capability of a computational model through comparison with a set of experimental data. Uncertainty in both the data and the model are, in fact, critical and must be mathematically understood to do both calibration and validation correctly. Sensitivity analysis, being an important methodology in uncertainty analysis, is thus important to both calibration and validation. In this talk, I intend to clarify the language I just used and express some opinions on the associated issues. I also will discuss who might care and why. Finally, I will endeavor to identify some technical challenges that must be resolved for successful validation of predictive modeling capability.

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